Five Year Review Report

Wauconda Sand & Gravel Landfill
Lake County, Wauconda, IL

Pursuant to CERCLA

Prepared By:

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Date

I. INTRODUCTION

A. Authority and Purpose

The United States Environmental Protection Agency (U.S. EPA), Region 5, conducted this statutory five-year review under Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The purpose of the statutory five-year review is to evaluate whether a completed remedial action remains protective of human health and the environment at sites where hazardous waste remains on-site at levels that do not allow for unlimited use and unrestricted exposure. The Type Ia review conducted for this site is applicable to a site at which response is complete, but monitoring activities are ongoing. This review will be placed in the Site files and local repository for the Wauconda Sand & Gravel Landfill Superfund Site (the "Site") in Lake County, Wauconda, Illinois.

B. Site History

The Wauconda Sand & Gravel Site is located in Lake County, Illinois, north of the Village of Wauconda. The 74-acre Site comprises a 43-acre unpermitted landfill, a nine-acre permitted landfill, nine acres that are excavated but unfilled, and 13 acres of perimeter property. The area surrounding the Site is mixed residential, agricultural and light industrial. The Site is bordered on the north by Mutton Creek.

The Site began operation as a landfill in 1941 on land previously used as a sand and gravel quarry. The 52-acre, landfill portion of the Site received municipal, residential, commercial and industrial wastes between 1941 and 1977. In the mid-1970s and early 1980s, the landfill adversely impacted the water quality of Mutton Creek. In addition, polychlorinated biphenyls (PCBs) and volatile organic compounds (VOCs) were detected in on-site monitoring wells and surface water samples.

The U.S. EPA placed the Site on the National Priorities List (NPL) on September 8, 1983 (48 FR 40658). The U.S. EPA conducted the remedial investigation and feasibility study (RI/FS) for the Site from 1983 - 1985. At that time, the Site was divided into two operable units, 1) to address imminent concerns and 2) overall site actions.

Operable Unit 1- Interim Action

U.S. EPA concluded after completion of the RI/FS, that groundwater and surface water in the immediate area of the Site had been impacted. Seven alternatives were evaluated and an Interim Record of Decision (ROD) was signed by U.S. EPA and the IEPA in September, 1985. An Administrative Order on Consent (AOC) was signed with a group of potentially responsible parties (PRPs) in July, 1986 for the PRPs to perform the interim measures. The settling PRPs identified themselves as the Wauconda Task Group (WTG) and implemented the following: installation of a leachate collection system to stop leachate releases to Mutton Creek; installation of a fence to prevent direct contact; repair and revegetation to portions of the landfill cover to reduce infiltration and promote runoff; and additional groundwater investigations.

Operable Unit 2 - Final Action

A second ROD was signed on March 31, 1989 to address outstanding sitewide issues. A Unilateral Administrative Order (UAO) was issued by the EPA on December 19, 1989, which ordered the PRPs to conduct the remedial design and remedial action (RD/RA) selected in the ROD. The final remedial design was completed and approved on September 30, 1991. The remedial action activities began with contractor mobilization on May 5, 1992. The RA was certified complete on August 2, 1996. The Preliminary Closeout Report (PCOR) was signed by EPA on August 22, 1996, to document that sitewide remedial action activities were complete.

The final remedy selected included landfill cap upgrades to reduce the amount of infiltration, control erosion, and reduce gas emissions; installation of additional landfill gas vents; restricted use of on-site ground water through institutional controls; continued operation and maintenance of the leachate collection system; modification to the ground water monitoring program, which included installation of several new wells, as well as closure of monitoring wells; continued long-term monitoring of Mutton Creek; as well as long-term operation and maintenance of the landfill cap and its associated components.

II. DISCUSSION

A. Remedial Objectives

The remedial action objectives of both RODs were to address the contamination source, including waste refuse and contaminated groundwater. The Interim Action remedy selected to meet these objectives included:

- the installation of a leachate collection system, with off-site treatment of the leachate, to stop release to Mutton Creek;

- the regrading and revegetation of the landfill cap to promote runoff and reduce erosion; and

- the installation of the perimeter fence, to reduce the potential of human health risks by eliminating the direct contact exposure route.

These interim actions reduced contaminant loading of the groundwater, thereby reducing the potential human health risk associated with ingestion of the groundwater. Direct contact or exposure to the landfill contents is also reduced by addressing the source of the contamination.

The final remedial action objectives of the final ROD address the remaining concerns at the Site following implementation of the Interim Action. The final RA relies on natural attenuation via normal biodegradation as the principle method of groundwater treatment. Monitoring of the landfill gas and groundwater provides information on the contaminant concentrations, which provide information regarding the landfill cap. The final RA includes:

- further upgrade of the landfill cap to reduce infiltration, reduce surface gas emissions, and control erosion;

- the installation of additional landfill gas vents, with a contingency to install an active venting system;

- the implementation of institutional controls to restrict on-site groundwater usage;

- the continued operation of the leachate collection system;

- the installation of additional groundwater monitoring wells and closure of specified wells;

- the monitoring of the groundwater and Mutton Creek with long-term action levels established to reopen the ROD, if necessary; and

- the long-term operation and maintenance of the landfill cap, monitoring well network, gas vents, leachate collection system, and fence.

B. Remedial Actions

In July 1987, landfill cap repairs, consisting of placing additional cover material in areas which had less than two feet of cover material, were begun. In addition, a perimeter, chain link fence was installed to enclose the Site and construction of the leachate collection system, located along the north boundary of the Site, adjacent to Mutton Creek, were completed.

Five landfill gas vents were abandoned and in 1994, an additional ten vents were installed. Based on information included in a 1996 data letter report submitted and reviewed by EPA in 1996, the Agency concluded that the contingent option to install an active landfill gas venting system would not be constructed. The passive system has and is effective in controlling gas releases.

Groundwater monitoring has been conducted at the Site for over 10 years. Action levels for the groundwater associated with the Site have been established for on-site monitoring wells and off-site residential wells. For the on-site monitoring wells, Primary Drinking Water Standards or a cumulative carcinogenic risk not to exceed 10^{-5} has been established. Arsenic and vinyl chloride have been excluded from this calculation. Residential wells have action levels at one-half the Primary Drinking Water Standards, with chloride set at 200 mg/L, sodium at 100 mg/L, and cyanide at 0.022 mg/L. Annual monitoring reports are submitted to EPA. Current information indicates that the action levels are being met. Groundwater monitoring will continue for 30 years or until further notice from EPA.

In May 1992, additional cap repairs were conducted in areas were settling and surface water ponding was noted; where the cap’s thickness was less than two feet in depth; and in isolated areas where poor vegetation existed, or in areas where erosion or surface cracks had occurred. In

1996, an additional upgrade was performed on the north slope of the landfill, where a 40 mil thick, linear low density polyethylene liner was installed to further reduce infiltration and the subsequent leachate generation. The area was regraded and reseeded after this upgrade.

The original leachate collection system was installed in 1987 and was upgraded in 1991. The system intercepts and transmits leachate along the northern slope to a pumping chamber at the west side of the landfill. A transfer force main from the pumping chamber connects to the Village of Wauconda sanitary manhole south of the Site. By agreement with the Village, the discharge volume is limited to 28,000 gallons measured over a 7-day period. In the event that collected volumes exceed these limits, an aboveground storage tank is located on the east side of the Site. Contents of the tank may be held and then discharged within the allowable volumes via the force main, or shipped for off-site disposal.

On May 5, 1997, during a site inspection with the PRP's contractor, Conestoga-Rovers, EPA became aware that the landfill cap liner upgrade was not reducing leachate generation to the PRP's satisfaction. No modifications to the system or the northern slope have been proposed to EPA at this time.

III. RECOMMENDATIONS

I recommend the continued operation and maintenance of the landfill cap, gas and leachate systems, and monitoring well network until clean-up standards are achieved. I recommend that EPA evaluate proposals to further upgrade the northern landfill slope and/or leachate collection system if submitted.

IV. STATEMENT OF PROTECTIVENESS

I certify that the remedies selected for this Site remain protective of human health and the environment.

V. NEXT FIVE-YEAR REVIEW

The next five-year review will be completed by May 20, 2002, which is five years from the date of this review, which is approximately five years from the date on-site construction mobilization occurred at the Site (May 2, 1992).